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Enforcement of Codes of Ethics

9.1 Introduction

The occurrence of misconduct (cheating) starts early in the life of a student, usually at school, then following through to university, and into adult life (Chapter 1 and Chapter 4) (Marcoux, 2002; Carpenter et al., 2004). Whatever the reasons or rationale given for cheating or plagiarism, and there are many (Relman, 1989; Woodward and Goodstein, 1996; Brown, 2007) – they should not be accepted. It is not sufficient to give the miscreant to merely accept an apology from a knowing cheater followed by a slap on the wrist. This type of action only serves to propagate the problem.

The news media are often criticized for reporting cheating and misconduct in noticeable headlines (Chang, 2002). But if they do not which societies or organizations (i.e., universities) will stand up for what is right and report cheating (misconduct) to its fullest extent? They will make a stance, if forced into it by the news media!

It is essential that any organization enforces the code of ethics that has been adopted by the organization. If this is not done, anarchy in the form of misconduct and any other forms of unethical behavior that can be conjured up will be prevalent (Frankel, 1989; Schwartz, 2001; Fleddermann, 2008).

In fact, the authority of any society or organization to discipline the membership should be clearly stated in the Code of Ethics. Each society should have the ability to determine the Rules of its Proceedings, punish its members for disorderly behavior, and, with the concurrence of (usually) a specified majority, expel a member. Through the years, disorderly behavior has become synonymous with improper conduct such as disloyalty, corruption, and financial wrongdoing, particularly for personal gain.

Furthermore, Section 8B2.1.(b)(5)(B) of the United States Sentencing Commission's Federal Sentencing Guidelines states, "the organization shall take reasonable steps – to evaluate periodically the effectiveness of the organization's compliance and ethics program." Should a company or organization be involved in a criminal proceeding, the extent to which the company (or organization) takes steps to ensure that their compliance and ethics program is effective should be considered during the sentencing phase. The same should apply to any political or commercial organization.

Not measuring the effectiveness of a program only increases the risk and exposure for the company. In dealing with an organization, customers, suppliers, employees and communities would be wise to ask questions about the organization's intent and commitment to integrity and proper ethical conduct.

Although there are many examples of misconduct one might ask, in the context of political and financial wrongdoing, how a politician (or anyone) might forget he has the equivalent of \$10,000,000 in a foreign bank account, or how a bank manager can legally become a multi-millionaire when

his salary does not allow such accumulation of wealth. Yet, such events do occur!

However, through the years, perceptions of wrongdoing or conflicts of interest by society members may have changed. What might be viewed today as blatant impropriety could have been accepted as norm or simply ignored years ago. Thus, the Code of Ethics should be frequently updated to move with the times and maintain a cautious "over-watch" of the behavior of the members.

Finally, it is better to cut off some of the misconduct at the source by giving scientists and engineers the recognition that they deserve. Generally, scientists and engineers who believe that they deserve more recognition are more likely to falsify, plagiarize, or manipulate their data in order to report successful results. Small scale deviant practices are likely to persist because, despite the canons of scientific research scientists can always attribute small inconsistencies to unavoidable errors that accompany or infiltrate all research (Glaser, 1964; Barber, 1976). One of the major determinants of judgments of the degree of responsibility is whether a controllable act is perceived or intentionally committed or due to negligence (Werner, 1995, page 13). Since judgment can only be reliably made after some period of observation or investigation. There is a general feeling that practices have increased.

Before deciding whether an ethical crisis exists, it must be determined whether or not one of three situations exists:

1. whether ethical standards are unknown and unclear,
2. whether ethical standards are clear but ignored,
or
3. whether ethical standards being followed
(McDowell, 2000, page 6).

Whether or not there is a crisis in professional responsibility depends on the extent to which individuals were

responsible and disciplined before acquiring professional status. The fact remains that the search for truth, knowledge and understanding of scientific and engineering phenomena pose powerful ethical demands for the individual who wants to be part of a community of individuals who call themselves scientists and/or engineers (Guba, 1990, page 145). Indeed, methodological, analytical, and ethical issues are closely interconnected (Ryan, 2009, 229); particularly so, because we have to relate with people in doing research, people whose attitudes, values, and perceptions of issues vary.

9.2 Following a Code of Ethics

A code of ethics is important in many respects but, above all, it sets the *tone* from the top of the culture of the organization (Hileman, 2005). Moreover, an effective code establishes the ethical expectations for employees and management alike, and sets forth the mechanisms for enforcement and consequences of noncompliance. When the Code is perceived as an integral component of the organization's culture, is understood, followed and enforced, it can provide protection for the organization from the actions of a *rogue employee*.

The code should set forth the process for its administration, including mechanisms to disclose and document any potential conflicts of interest or to obtain waivers from any particular policy or provision. It should also provide guidance to assist employees or the membership in evaluating specific circumstances, with the standard for behavior being: if all the facts and circumstances regarding the matter were made public, the employee or member involved and the organization should be pleased to be associated with the activity.

However, the major challenge in relation to measuring the effectiveness of a code of ethics of any organization is related to the definitions that are contained within the code.

Unless the definitions in a code of ethics are sufficiently specific, the definitions are meant to be interpreted on an as-needed basis. On the other hand, if the definitions in a code of ethics are too specific, the membership or the employees will exploit loopholes and engage in behavior that technically follows the letter of the code, but not necessarily the spirit of the code. Therefore, the language used in a code of ethics must be understandable, lacking loopholes, and promote honesty and ethical principles that are in keeping with the goals of the organization.

A code of ethics for scientists and engineers, and for any organization has been put in writing and formally adopted (Chapter 5 and Chapter 6).

Understanding a code of (professional) ethics, as a convention between professionals, we can explain why scientists engineers cannot depend on mere private conscience when choosing how to practice their profession, no matter how good that private conscience; and why scientists engineers should take into account what an organization of scientists or engineers has to say about what scientists or engineers should do (irrespective of directives from above that appear to contract honorable and ethical behavior).

The language of any code of ethics must be interpreted in light of what it is reasonable to suppose the authors of the code intended. It is to be assumed that the authors of a code of scientific or engineering ethics (whether those who originally drafted or approved it or those who now give it their support) are rational persons and had the best interests of the organization and them membership in mind when they wrote the code. Furthermore, it is reasonable to suppose that the code of ethics would not require them to risk their own reputations and that the code includes anything that would be generally considered to be immoral.

Given the above, scientists and engineers are clearly responsible for acting as the respective codes of ethics require. Scientists or engineers should behave as the code

requires and should also support the code by encouraging others to do as the code requires and by calling to account those who do not.

9.3 Enforcing a Code of Ethics

An organization that wishes its code of ethics to have an impact on the actions taken can increase the likelihood of this by careful selection and presentation of the content of the code. This can also increase the likelihood of having an impact by including an enforcement provision in the code.

While code content affects actions by changing a the beliefs of a decision maker as to whether an action is ethical, an enforcement provision affects actions by making the unethical (or ethical) action less (or more) desirable to the decision maker (Lere and Gaumnitz, 2003). An organization choosing to have an enforcement provision in its code of ethics is providing additional incentives (or disincentives) to encourage (or discourage) selection of certain actions.

The enforcement provisions in a code of ethics can have an impact on the employees or membership of organization insofar as for the goal of the procedures for enforcing of any *The Code of Ethical Principles and Standards*, which is to eliminate unethical behavior, not to impose punishment. Above all, the code must be written in easy-to-read and understandable but relevant language. Two ways to improve the delivery of the message are to: increase the clarity with which the message is presented, and secondly to avoid having an excessively long code.

Furthermore, in designing an enforcement provision for a code of ethics, an organization may wish to consider how it will know if the provisions of the code have been followed and the type of mechanism that will determine if a penalty is to be levied and how the individual guilty of the unethical action will, in fact, bear the penalty that the organization has specified.

In some professions, membership in a professional organization is voluntary. In this case, membership is not associated with the ability to engage in the profession. In fact, many members of the profession may not belong to the organization. If membership in an organization is voluntary, the penalties that an organization can specify generally will not have as significant an impact on decisions made as if membership is mandatory.

The goal in improving code effectiveness through increasing *clarity* is to increase comprehension – the goal is to make sure that the position that the code framers intend to communicate is the message that the decision maker receives. This can be achieved by precisely stating each code position and the greater the clarity, the more likely it is that the decision maker will change his or her beliefs concerning the ethical nature of an action and select the action desired by the framers of the code.

The *length* of a code may have an impact on its effectiveness – having a relatively short code may increase the likelihood of changing the perceptions of the decision makers by increasing awareness of the meaning of the code. On the other hand, a long code is apt to reduce the likelihood of the decision maker being aware of a specific position in the code. Providing each individual within the company or organization with a code of ethics that is many pages long is likely to result in few if any of the individuals reading the code. Even if individuals have read the code, long codes reduce the likelihood that they will retain enough of the guidance provided in the code to have a major impact on decisions made.

Enforcement of a code of ethics is more likely to be straight forward when the code is clear and understandable and leaves no room for misinterpretation or interpretation that will benefit the person accused of misconduct. The code of ethics should also indicate the right of the accused and the accusers should not act as judge and jury (Knight, 1991).

The enforcement procedures provide a process for receiving, investigating and adjudicating allegations. Society members are held to the *Code*, as are persons holding a society-sanctioned credential. The objective is to engage in a process that is fair, responsible and confidential.

The procedures are designed to protect society members from unfair allegations, and guard society officers and staff from personal liability in cases alleging unethical conduct.

The procedures should reflect seven fundamental principles:

1. to be considered, an allegation of violation of the *Code* must be made in writing and signed by an individual,
2. the written complaint must be filed with the office of the president and CEO, or to the International Headquarters, for consideration by the Ethics Committee,
3. complaints can be made/alleged only against members or a person holding an society-sanctioned credential,
4. laws take precedence over ethical misconduct,
5. the role of society chapters in the ethics process is to educate members about ethical issues and standards, the *Code*, and the enforcement procedures in general,
6. chapters have no formal or informal role in the processing or adjudication of complaints, and
7. chapters should focus their action on ethical issues, standards and education.

The Ethics Committee carries out the enforcement process if there is an alleged violation of the *Code* that is supported by a formal complaint and sufficient documentation. If efforts to persuade the person to cease and desist have failed, the Committee may decide to hold a

hearing to determine whether a violation of the Code has occurred and decide what disciplinary action, if any is appropriate.

Penalties for violation of the Code include:

1. a letter of reprimand,
2. censure and prohibition against holding Association and chapter office or participating in society activities for one year,
3. suspension of membership and prohibition against participation in society activities for a stated period, and
4. permanent revocation of membership, including recommendation to withdraw any society sanctioned credential.

Measurement of the success of a code of ethics falls into two categories, process and outcome. Examples of process measures for an ethics and compliance program might include, for example:

1. number of employees attending ethics and compliance training,
2. Twenty per cent of employees who have signed the company code of conduct,
3. number of calls or contacts to the ethics help-line, and
4. the quality or completeness of the information in the ethics and compliance case database.

Process measures are straight-forward and look at events and activities. They are necessary to ensure things happen as planned and provide feedback on the use of resources. When it comes to ethics and compliance programs measuring effectiveness, it may be difficult but it should not be impossible to implement a code of ethics in any organization and, even though the organization might be unique,

the code should the measures need to fit the needs and requirements of the organization.

Measuring the effectiveness of ethics and compliance programs is a developing discipline and may appear a daunting task.

One manner of measuring the effectiveness of a code of ethics is to observe:

1. levels of observed misconduct,
2. reporting observed misconduct, and
3. response to any reprimands or punishment metered out to those found guilty of misconduct and/or unethical behavior.

One of the difficulties involved in investigating claims of unethical behaviors in order to meaningfully address the issue of scientific misconduct at the international level stems from the diversity of definitions and procedures among countries and institutions. Any definition, although deemed satisfactory when designed, might be considered to be too restrictive when reduced to practice. Thus, alternatives to defining misconduct include attempts to take inventory of all misbehavior that undermine science or engineering integrity or proposals for a code of conduct.

However, investigation of misconduct *must* proceed and not be delayed on the basis of a (flimsy) excuse related to procedure. At the same time, the proceedings cannot take the form of a *kangaroo court* presided over by a *hanging judge!*

At different stages, scientific and engineering misconduct tends to be overlooked insofar as events are underreported or not reported at all (Nitsch et al., 2005), leaders of institutions and organizations are reluctant to launch investigations, and journal editors sometimes do not retract erroneous papers.

On the other hand, leaders of institutions have their share of responsibility. They are sometimes reluctant to conduct

investigations, since misconduct is likely to jeopardize the name of their institution/organization. Investigations can also be costly in terms of time and money, and sometimes institutions are poorly equipped to conduct them. However, the failure to proceed with an investigation of reported misconduct will always appear to be paradoxical to any observer since such investigations could show how the institution/organization is able to reliably handle misconduct and punish the miscreants.

Journal editors, and reviews of submitted papers, also have a role in disclosing information about the integrity of the papers. When fraud is assessed, some journals do not publish any note nor retract the paper, sometimes because they require that all the authors agree with the retraction. Whatever, the case, some action must be taken (Relman, 1989); it is unfortunate that this is not always the case and a cover-up (advertent or inadvertent) may be the *modus operandi* of the university or organization involved.

Published retractions play a valuable role because publicity has a key role in cleaning retracted papers off the literature. In fact, the less public coverage a retracted paper receives, the more likely it to continue to be cited.

For example, a professor (while developing a theory) did not check the credibility of the experimental work of his students and coworkers was informed that the experimental work was not only flawed but incorrect; the coworkers and students had not performed any control experiments to collect and assess the base data. Nevertheless, the professor continued to cite this paper as evidence for his theory until the errors and omissions were it was pointed out in another paper (by other workers) that the credibility of his earlier work was non-existent. The professor even tried one more time to cite his earlier work as evidence for his theory but the journal editor had the wherewithal to use one of the two opposing workers as a reviewers. He pointed out using direct and straight-to-the-point comments and since then the professor appears to have ceased

and desisted in his quest to use his earlier (flawed) work as evidence for his theory.

Obviously, this professor was not concerned about the culture of his research school and was promoting dishonesty to his coworkers and students. The university, of course, was apprised of the details but refused to act in any manner.

To build a culture of research integrity, proper training of current and future researchers is essential. Any researcher is less likely to *misbehave* not only when there are internal rules of conduct but also where the environment is such that research misconduct in any form is not overlooked – for any reason!

Integrity should be developed in an overall research education program, in a creative way by the professor, with support or guidance from the university. In the above example, this did not happen.

Investigation of claims of unethical behavior by a society member are usually forwarded to the society Ethics Committee, which is a committee dedicated to the rights and well-being of the society members; the Ethics Committee may also be known as a Review Board.

For example, the American Chemical Society has a Committee on Ethics whose mission is:

To coordinate the ethics-related activities of the Society, serve as an educational resource and clearinghouse, but not as an adjudication body, for ACS members seeking guidance on ethics issues; raise awareness of ethics issues through meeting programming and columns/editorials; review recognition opportunities for acknowledging ethical behavior; and to develop and oversee such other ethics-related activities as will serve ACS members and promote the Society's standards of ethical conduct within the profession of chemistry and its related disciplines.

This Committee not only oversees ethical issues as they relate to the society but also maintains a vigil of ethics-related

issues so that members are fully aware of ethical issues and can seek guidance on such issues.

In any society, the Ethics Committee is an advisory group appointed by the Executive Board. The Committee reviews, on request, ethical or moral questions that may arise from a member. Committee members include members of the society from all sub-disciplines.

Upon request, the committee will provide advisory consultation and review in cases where ethical dilemmas are perceived by any member.

The primary responsibility will be:

1. to encourage dialogue,
2. to identify issues offer viable options,
3. to seek supplemental resources,
4. to encourage problem resolution at the physician/patient level, and most important
5. to not pass the buck.

For example, the sole advisor (who was a non-academic) to a PhD student discovered that that student always managed to have an excuse for not attending a pre-arranged update meeting.

Upon reading the draft thesis, the advisor discovered that the student had been guilty of:

1. plagiarism,
2. included work in the thesis that was not his own but which he passed off as his own, and
3. unethical behavior in which he (the student) had enlisted the aid of others (academic faculty members) to justify not reporting the work to the his-academic advisor.

The advisor submitted a detailed report to the Provost and Vice-Provost who passed it to the Ethics Committee

(composed of the Provost and Vice-Provost!) of that university. The Committee justified the student's actions seven-days-from-Sunday and decided that the student was in the right – by inference, the non-academic advisor was unjustified in his claims of impropriety. The student was allowed to graduate with a PhD.

One wonders about the type of message this decision sent to other students and to other faculty when a non-academic advisor is seen (by inference) as the villain of the piece.

The expected penalty for engaging in an unethical action is the product of a penalty specified for doing so and a probability that the penalty will be borne. Organizations have two avenues when designing enforcement provisions: To increase the size of the penalty or to increase the probability that an individual engaging in an unethical action will bear that penalty. The greater the expected penalty, the less attractive an unethical action is to a decision maker, thus discouraging him or her from engaging in that action.

Although, in general, a very large penalty will have a greater impact on discouraging unethical actions than will a small penalty, organizations face significant constraints on the effective size of the penalty.

In designing an enforcement mechanism, organizations should recognize these constraints:

1. being subject to the code may be voluntary, and
2. economic alternatives available to the decision maker may allow them to escape sanctions by changing jobs or withdrawing from the organization.

Thus, an organization that is designing or modifying a code of ethics with the goal of having an impact on the action that a decision maker takes has two options: (1) educate the employees or membership as to the ethical nature of an action, and (2) create a disincentive which

discourages the employees or membership from taking an unethical action. Both options apply to workability of the code of ethics as well as to the enforcement mechanisms.

The challenge for many higher education institutions is to cultivate a culture of inquiry that puts the emphasis on professional responsibility, obligations, commitments and research. Some class-based ethical issues are: using the work (assignments) given to students as data for research, balancing a power of coercion by a professor with sensitivity to the concerns of the students and prioritizing the educational value of a course over concerns about achieving research goals through teaching of the course. (Gale, 2002, page 40; Markle, 2002, page 42). In addition, there must also be a balance on the amount of research that is conducted by the professor and this should *not* affect preparation for teaching and to the point where students become discouraged and feel they are not learning (Braxton and Bayer, 1999, page 22–39 and page 43–60). This surely leaves the student (who might be readily tempted) no option but to seek alternate routes of submitting passing assignments and to seek the necessary means (other than intensive study) to pass examination.

Furthermore, the author learned the details of the revenue that the faculty generate for the university through a synopsis of a report prepared for the Texas A&M system (TAMU system). The report, which was not available to the authors of this book but was available as a synopsis in C&E News (C&EN, 2010b), listed salaries, money brought in from teaching, and research grant funding; the report was compiled in response to demands by Texas taxpayers for greater accountability from the university. The academics were not happy as it was not obvious to them how the report will influence their careers within the TAMU system. However, there is also concern that faculty could be pressured to focus on teaching, narrowly defined to emphasize classroom instruction, rather than the so-called broader aspects of scholarship, which includes research. Perhaps

the thinking of non-academics has been off-track all of the years by thinking that the prime mandate of a university was to teach!

In summary, one of the best ways to prevent misconduct for any organization is to adopt and enforce policies which provide sufficient detail (written in understandable language to provide guidance to research staff (Taylor et al., 2006; Nadelson, 2007). If there are a wide variety of disciplines within the institution, then each discipline needs a data policy that is relevant to the specific type of research. In addition, the laboratory director should provide mentoring or formal training on policies (Hileman, 1997, 2005).

9.4 Reporting Misconduct

There is a growing consensus that researchers have a responsibility to report misconduct by other researchers when the misconduct is serious and when they are in a position to document it. Yet typically there are strong pressures (from supervisors, colleagues, and others) not to report misconduct, and hence most instances fall into the category of whistleblowing. Measures to protect individuals who responsibly report research misconduct are being implemented at research facilities, and the concept of research misconduct now applies to punitive measures taken against these individuals (Von Hippel and Chalk, 1979; Bok, 1980; Sprague, 1989). However, there often remains the stigma against a person who reports a colleague of misconduct (Martin and Schinzinger, 2005).

There has been increased attention paid in the last 30 years to whistleblowing, both in government and in private industry. According to the codes of ethics of the professional scientific and engineering societies, scientists and engineers are compelled to blow the whistle on acts or projects that harm these values. Scientists and engineers also have the

professional right to disclose wrongdoing within their organizations and expect to see appropriate action taken.

A *whistleblower* is a person who raises a concern about wrongdoing occurring in an organization or body of people and usually this person would be from that same organization.

The revealed misconduct may be classified in many ways; for example, a violation of a law, rule, regulation and/or a direct threat to public interest, such as fraud, health/safety violations, and corruption. Whistleblowers may make their allegations internally (for example, to other people within the accused organization) or externally (to regulators, law enforcement agencies, to the media or to groups concerned with the issues).

Most whistleblowers are *internal whistleblowers*, who report misconduct to a fellow employee or superior within their company. Internal whistleblowing occurs when an employee goes over the head of an immediate supervisor to report a problem to a higher level of management. Or, all levels of management are bypassed, and the employee goes directly to the president of the company or the board of directors. However it is done, the whistleblowing is kept within the company or organization.

One of the most interesting questions with respect to internal whistleblowers is why and under what circumstances people will either act on the spot to stop illegal and otherwise unacceptable behavior or report it. There is some reason to believe that people are more likely to take action with respect to unacceptable behavior, within an organization, if there are complaint systems that offer not just options dictated by the organization, but a *choice* of options for individuals, including an option that offers near absolute confidentiality.

External whistleblowers, however, report misconduct to outside persons or entities. In these cases, depending on

the information's severity and nature, whistleblowers may report the misconduct to lawyers, the media, law enforcement or watchdog agencies, or other local, state, or federal agencies.

Internal whistleblowing and external whistleblowing are generally perceived as disloyalty, putting the whistleblower on the defensive. However, keeping the report of misconduct within the company is often seen as less serious than going outside of the company. Under most U.S. federal whistleblower statutes, in order to be considered a whistleblower, the federal employee must have reason to believe his or her employer has violated some law, rule or regulation; testify or commence a legal proceeding on the legally protected matter; or refuse to violate the law.

Anonymous whistleblowing occurs when the employee who is reporting misconduct refuses to divulge his name when making accusations. These accusations might take the form of anonymous memos to upper management or in the form of anonymous phone calls to the police. The employee might also talk to the news media but refuse to let her name be used as the source of the allegations of wrongdoing. On the other hand, *acknowledged whistleblowing*, on the other hand, occurs when the employee puts his name behind the accusations (thereby leading to the sub-categories of *internal whistleblowing* and *external whistleblowing*) and is willing to withstand the scrutiny brought on by his accusations.

In order to bring accusations of misconduct, the whistleblower must be in a very clear position to report on the problem – hearsay is not adequate and first-hand knowledge is essential to making an effective case about wrongdoing. This implies or indicates that that the whistleblower must have enough expertise in the area to make a true assessment of the perceived misconduct. If a scientist or engineer has undertaken work in areas outside his expertise, then he

may not be in a position to make a realistic and believable assessment of the perceived misconduct.

It is important for the whistleblower to understand his motives before reporting the perceived misconduct, and it will be only perceived until proven. The whistleblower *must not* take the action as a means of revenge upon fellow employees or the organization. Furthermore, it is *not* acceptable to blow the whistle in the hopes of future gains, such as promotion, or any form of public recognition, or financial gain.

Whistleblowers frequently face reprisal – sometimes at the hands of the organization or group which they have accused, sometimes from related organizations, and sometimes under law.

In cases where whistleblowing on a specified topic is protected by statute, U.S. courts have generally held that such whistleblowers are protected from retaliation. However, a closely divided US Supreme Court decision held that the First Amendment, free speech guarantees for government employees do not protect disclosures made within the scope of the employees' duties.

Ideas about whistleblowing vary widely. Whistleblowers are commonly seen as selfless martyrs for public interest and organizational accountability. Others view them as a tattle tale or a *snitch* (street slang), solely pursuing personal glory and fame. Some consider that whistleblowers should at least be entitled to a rebuttable presumption that they are attempting to apply ethical principles in the face of obstacles and that whistleblowing would be more respected in governance systems if it had a firmer basis in virtue ethics.

It is probable that many people do not even consider blowing the whistle, not only because of fear of retaliation, but also because of fear of losing their relationships at work and outside work.

Because the majority of cases are very low-profile and receive little or no media attention and because whistleblowers who do report significant misconduct are usually put in some form of danger or persecution, the idea of seeking fame and glory may be less commonly believed.

Persecution of whistleblowers has become a serious issue in many parts of the world. Although whistleblowers are often protected under law from employer retaliation, there have been many cases where punishment for whistleblowing has occurred, such as termination, suspension, demotion, wage garnishment, and/or mistreatment by other employees. For example, in the United States, most whistleblower protection laws provide for limited *make whole* remedies or damages for employment losses if whistleblower retaliation is proven. However, many whistleblowers report there exists a widespread “shoot the messenger” mentality by corporations or government agencies accused of misconduct, and in some cases whistleblowers have been subjected to criminal prosecution in reprisal for reporting wrongdoing.

As a reaction to this many private organizations have formed whistleblower *legal defense funds* or support groups to assist whistleblowers. Depending on the circumstances, it is not uncommon for whistleblowers to be ostracized by their co-workers, discriminated against by future potential employers, or even fired from their organization. This campaign directed at whistleblowers with the goal of eliminating them from the organization is referred to as *mobbing*. It is an extreme form of workplace bullying wherein the group is set against the targeted individual.

In the United States, legal protections vary according to the subject matter of the whistleblowing, and sometimes the state in which the case arises. Nevertheless, a wide variety of federal and state laws protect employees who call attention to violations, help with enforcement proceedings, or refuse to obey unlawful directions.

The collection of laws means that victims of retaliation need to be alert to the laws at issue to determine the deadlines and means for making proper complaints.

Some deadlines are as short as 10 days while it is 30 days for environmental whistleblowers to make a written complaint to the Occupational Safety and Health Administration (OSHA). Federal employees complaining of discrimination, retaliation or other violations of the civil rights laws have 45 days to make a written complaint to their agency's equal employment opportunity (EEO) officer. Airline workers and corporate fraud whistleblowers have 90 days to make their complaint to OSHA. Nuclear whistleblowers and truck drivers have 180 days to make complaints to OSHA. Victims of retaliation against union organizing and other concerted activities to improve working conditions have six months to make complaints to the National Labor Relations Board (NLRB). Private sector employees have either 180 or 300 days to make complaints to the federal Equal Employment Opportunity Commission (depending on whether their state has a deferral agency) for discrimination claims on the basis of race, gender, age, national origin or religion. Those who face retaliation for seeking minimum wages or overtime have either two or three years to file a civil lawsuit, depending on whether the court finds the violation was *willful*.

Those who report a false claim against the federal government, and suffer adverse employment actions as a result, may have up to six years (depending on state law) to file a civil suit for remedies under the US False Claims Act (FCA). Under this Act, the *original source* for the report may be entitled to a percentage of what the government recovers from the offenders. However, the *original source* must also be the first to file a federal civil complaint for recovery of the federal funds fraudulently obtained, and must avoid publicizing the claim of fraud until the US Department of Justice decides whether to prosecute the claim itself. Such lawsuits must be filed under seal, using special procedures

to keep the claim from becoming public until the federal government makes its decision on direct prosecution.

Legal protection for whistleblowing varies from country to country but most countries have a framework of legal protection for individuals who disclose information so as to expose malpractice and matters of similar concern. In the vernacular, it protects whistleblowers from victimization and dismissal.

There are ways for an organization to solve the whistleblowing problem and these include

1. a strong organizational ethics culture, which includes a clear commitment to ethical behavior,
2. clear lines of communication within the corporation, which gives openness to an employee who feels that there is something that must be fixed a clear path to air his concerns,
3. all employees must have meaningful access to high-level managers in order to bring their concerns forward, and
4. willingness on the part of management to admit mistakes, publicly if necessary (Martin and Schinzinger, 2005).

9.5 Published Examples of Unethical Behavior

There are many examples of unethical behavior or misconduct in science and engineering (Jackson, 1981; Hileman, 1997; Resnik, 1998; Hileman, 2005; Martin and Schinzinger, 2005; Fleddermann, 2008) – too many to be reproduced here – so only the most recent salient published examples will be presented.

Many scientist and engineers find that discovering unethical behavior among co-workers actually tests their own values and ethical principles. After all, unethical behavior that is not illegal frequently falls in a grey area between

right and wrong that make it difficult to decide what to do when it is encountered. Furthermore, different scientist and engineers have different views regarding what is ethical and what is unethical. For example, some people feel that it is alright to tell a little *white lie*, or to make one long distance call on the company's time and money, as long as they can justify it in their mind.

A *white lie* is, by a misused and misinformed definition, an unimportant lie (especially one told to be tactful or polite). However, in truth, it is a lie (also called prevarication, falsehood) and is a type of deception in the form of an untruthful statement, especially with the intention to deceive others, often with the further intention to maintain a secret or reputation, protect someone's feelings or to avoid a punishment or repercussion. In short, it is a deliberate, untrue statement which (supposedly) does no harm or is intended to produce a favorable result for the originator of the white lie.

When scientist and engineers discover colleagues doing something that they know is wrong by the company's standards, their own sense of what is right and what is wrong instantly comes into question. That person needs to consider how he feels about that particular activity, as well as informing about that activity, or turning a blind eye. Even by deciding to do something about it, the scientist or engineer who has discovered the unethical behavior is presented with a number of difficult choices. Should he speak to the perpetrator directly? Should he arrange to report the incident directly to a company supervisor?

To make this decision easier, many companies have adopted several techniques that allow for the management of unethical activities. The first step is to create a company policy, in writing, that is read and signed by each employee. This erases most feelings of ambiguity when it comes to deciding what to do after witnessing an unethical behavior.

The second is to give a clear outline of what is expected of the person who has discovered the unethical behavior.

It should include the person who should be contacted, and how to go about doing it. With clear instructions, there will be less hesitation in reporting unethical activities, and then they can be dealt with quickly and relatively easily, before they develop into overwhelming issues.

Furthermore, the repercussions of unethical behavior should be clearly stated – such as summary dismissal – and acted upon when accusations of misconduct by scientist or engineer are proven (or admitted). This way, both the person doing the activity, and the witness to the activity will be well aware of the way that things will be dealt with, and there won't be any risk of someone not reporting unethical behavior because they're afraid that the culprit will be unfairly treated.

In a recent issue of *Nature* magazine there was an interesting report of an examination of misconduct (Titus et al., 2008). The article reported that a poll of 3,247 scientists, asking a range of questions relevant to scientific misconduct. The study showed that 1 in 3 scientists has been guilty of fudging their results. Of 3,247 early- and mid-career researchers who responded, less than 1.5% admitted to falsification or plagiarism, the most serious types of misconduct listed. But 15.5% said they had changed the design, methodology or results of a study in response to pressure from a funding source; 12.5% admitted overlooking others' use of flawed data; and 7.6% said they had circumvented minor aspects of requirements regarding the use of human subjects. Overall, about a third admitted to at least one of the ten most serious offences on the list, which is a range of misbehavior described by the authors as 'striking in its breadth and prevalence.

The fact that many scientists are willing to tell an intellectual white lie seems fitting, given the circumstances. Still, their actions are reprehensible.

An increasing number of scientists are allured by flashy results and quick publications that will lead to widespread

publicity. Again, given current trends in science, the results of this study are disheartening and disappointing but certainly not surprising.

As examples of what are being claimed to be misconduct by scientist and engineers, several recent issues that have made headlines are given below. In order to identify these examples, the headlines used in the media are presented.

It is not the intent here to act as judge and jury but merely to report what had been found and presented elsewhere. The reader can then decide on the issues for himself whether or not he requires more detail of each case.

Giving Proper Credit (C&EN, 2007)

In 2007, after an extensive investigation in Stockholm University (Sweden) sanctioned an associate professor of chemistry, Armando Córdoba, for research misconduct. In a number of cases, the investigation found that Córdoba violated scientific ethics in his quest to publish research results in the emerging field of organo-catalysis. It appears that Córdoba failed to cite or cite properly the work of other scientists and thereby taking credit for new discoveries that were not his own.

It was also reported that this case revealed that the scientific community is often unprepared to deal with misconduct, particularly when the violations fall short of scientific fraud. Although ethical guidelines themselves seem clear, what to do about ethics violations is another matter.

Whatever, the issues, universities must learn that punishment should match the severity of the violations.

Bell Labs Confirms Fraud (C&EN, 2002)

Suspicious that Hendrik Schön, formerly a researcher at Bell Laboratories, was responsible for falsifying and fabricating scientific data were recently confirmed. An independent

inquiry commissioned by Bell Labs concluded that a member of one of the company's research teams had engaged in scientific misconduct. A spokesman verified that the scientist had been identified as Schön and that his employment with Bell Labs was terminated.

A committee of scientists and engineers investigated the validity of research data in the areas of molecular electronics (Schön field of interest), superconductivity and molecular crystals. The committee concluded that data manipulation and data misrepresentation has occurred. All other researchers who had contributed to the work in question were cleared of any misconduct.

Scientist Guilty on 47 Counts (C&EN, 2003)

A jury in Lubbock, Texas, has found plague researcher Thomas C. Butler guilty of 47 of the 69 charges he originally faced. He was cleared of one of the most serious charges: that he lied to FBI agents on January 14 when he told them that 30 vials of plague bacterium were missing from his Texas Tech University laboratory. Among other charges, the jury convicted him of having defrauded Texas Tech via contracts he had with pharmaceutical companies as well as having shipped plague cultures to Tanzania without proper permits or labeling. Butler spent two years in prison but was later acquitted of smuggling plague.

Chemistry's Colossal Fraud (Chemistry World, 2008)

One of the biggest cases of scientific fraud in chemistry occurred in India and involves senior academics who co-authored a considerable number of discredited academic papers with researcher Pattium Chiranjeevi.

An enquiry committee last year found Chiranjeevi, a professor of chemistry at Sri Venkateswara University (SVU), Tirupati, guilty of plagiarizing or falsifying results in over 70 journal articles published between 2003 and 2007. The

case saw the researcher stripped of all responsibilities except teaching – he continues to protest his innocence and is preparing to take legal action.

It is felt that the researchers/professors from other faculties that put their names to nearly 45 of the suspect papers include the heads of the university's physics, mathematics, geology and environmental sciences departments should have vetted the data before either putting their names (or allowing their names to be put) to a paper.

Climate Scientist Steps Down (WSJ, 2009)

The British scientist, Philip Jones, at the center of a scandal over climate-change research temporarily down as director of the Climatic Research Unit as a result of an internal probe that followed the release of hacked emails involving him and other scientist.

The action arose after hackers stole emails and documents from the East Anglia center that suggested Dr. Jones and other similar-thinking scientists tried to cover up the views of dissenting researchers and advocated manipulating the data. Dr. Jones defended the integrity of the institute's scientific work, while saying that he and his colleagues acknowledge that some of the published emails do not read well.

In addition, Pennsylvania State University confirmed that Michael Mann (see: *Judge Halts Virginia Climate Probe*), a climate scientist on the faculty who figures prominently in the emails, is under inquiry by the university. Dr. Mann's work reconstructing historic global temperatures has, over the past decade, become a focal point of debate.

As an aside and a point that seems to be forgotten (or ignored) in all of the climate-related debates and publications is that the earth is resilient to changes (Will, 2010) and also is currently in an inter-glacial period. As

a result (surprise, surprise!) the temperature of the earth will increase. The actual extent of the temperature rise is unknown (who was around to measure the temperature increase during the last inter-glacial period?) but and will contribute to the overall temperature rise. Perhaps the scientists who ignore such a phenomenon are also guilty of misconduct.

Judge Halts Virginia Climate Probe (C&EN, 2010a)

The case stems from a fraud investigation of climate researcher Michael E. Mann, who worked at the University of Virginia from 1999 to 2005, and whether or not Mann committed fraud in connection with four federal grants and one state grant. Mann, who is currently the Director of Earth System Science Center at Pennsylvania State University, is among the groups of climate scientists whose controversial e-mails were hacked from the University of East Anglia, in England, and made public late in 2009. The University of Virginia fought to withhold release any of Mann's original documents and has been successful in court. However, it is not clear what Mann did that was misleading, false, or fraudulent in obtaining funds from the Commonwealth of Virginia for his research.

No doubt there will be more to this issue as time goes by.

Academic Fraud in China (Economist, 2010)

It would seem that fraud remains rampant in China and misconduct ranges from falsified data to untruths about degrees, cheating on tests, and extensive plagiarism. The most notable recent case focuses on Tang Jun, ironically author of a popular book *My Success Can Be Replicated*, who has been recently accused of falsely claiming that he had a doctorate from the California Institute of Technology. He responded that his publisher had erred and in fact his degree is from another, much less prestigious, California school.

Other cases involve accusations of plagiarism against well-known Chinese scholars which have led to serious talk of investigations.

Such lapses of integrity do not appear to be unique to China, poor review mechanisms and a lack of checks on academic behavior all allow fraud to be more common. This calls into question the overall credibility of the scientific enterprise in China and leads to concerns about the safety of Chinese products and the integrity of information coming out of China.

Harvard Finds Scientist Guilty of Misconduct (NY Times, 2010) In August, after a three-year internal investigation, Harvard University announced that it had found a prominent researcher, Marc Hauser, responsible for eight instances of scientific misconduct during the course of his work related to *cognition and morality*. Hauser has also done work suggesting that morality has an evolutionary basis in animals, and has written two well-received books on the evolution of cognition, morality, and behavior.

Hauser is, at the time of writing, was on a one-year leave of absence from Harvard and has acknowledged that he made some significant mistakes; he also apologized for the problems this case had caused to his students, his colleagues, and the university.

In response to the investigation's findings, the University's Dean of the Faculty of Arts and Sciences has vowed to determine the sanctions that are appropriate (<http://arstechnica.com/science/news/2010/08/harvard-professor-found-guilty-of-scientific-misconduct.ars>).

Michael Smith, the Dean at Harvard involved with this issue who wrote up the results of the investigation, acknowledges that Hauser was found guilty of scientific misconduct, but he also added that the university considers specific

sanctions applied to anyone found responsible for scientific misconduct to be confidential. It appears that Harvard will not officially release details of whatever sanction they deem appropriate.

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